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DIOPHANTINE ANALYSIS.

109. **Proposed by HARRY S. VANDIVER, Bala, Pa.**

If $m+n+1$ is a prime integer, show that $m!\times n!-(-1)^{\frac{1}{2}(3m-n)}$ is divisible by $m+n+1$. For instance, $6!\times 4!-(-1)^7$ is divisible by 11.

110. **Proposed by L. E. DICKSON, Ph. D., The University of Chicago.**

Prove the results stated in the foot-note at the end of §4 in the article by L. E. Dickson in the October number of the MONTHLY.

111. **Proposed by HARRY S. VANDIVER, Bala, Pa.**

Show that: If a rational, integral polynomial of the *n*th degree in x, becomes a prime for more than n values of x, then it cannot be resolved into rational factors. (Test with the expression $x^4+2x^3+x^2+2x+1$.)

AVERAGE AND PROBABILITY.

135. **Proposed by L. C. WALKER, A. M., Graduate Student, Leland Stanford Jr. University, Cal.**

If the line joining two points taken at random in the surface of a given circle be the diagonal of a square, the chance that the square lies wholly within the circle is $2-4/\pi$.

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NOTES.

Prof. Lon C. Walker is doing postgraduate work in Leland Stanford Jr. University. F.

Prof. Harry S. Vandiver is taking a course of mathematics in the University of Pennsylvania. F

On December 15, the University of Klausenberg will celebrate the hundredth anniversary of the birth of Johann Bolyai. F.

Dr. F. Schottky of Marburg has been named to succeed the late L. Fuchs as Professor in the University of Berlin. Dr. K. Hensel of Berlin has been named Professor in the University of Marburg. D.

Dr. Joseph Swain, President of the University of Indiana since 1893, and formerly Professor of Mathematics in Indiana and Stanford Universities, was installed as President of Swarthmore College on November 15. D.

In the reconstitution of the University of London, complete courses of study in the various faculties of the University College have been established.

Mention may be made of the endowment of the department of pure mathematics by Mr Astor. The University is to be no longer merely an examining board.
D.

The address, November 13, of Dr. E. W. Hobson, retiring president of the London Mathematical Society, will be on the "The infinite and the infinitesimal in mathematical analysis." At this meeting the triennial De Morgan medal is to be presented to A. G. Greenhill for his investigations in pure and applied mathematics. D.

The centenary of the birth of Abel, at Christiania, September 4-7, was regarded as a national event in Norway. The King of Norway and Sweden and his son Prince Eugen made a special journey from Stockholm. Among the mathematicians making addresses were H. Weber, Volterra, L. Sylow, Forsyth, Picard, Schwarz, Zeuthen, Henzel, and Mittag-Leffler. By a special act of the Storthing, power had been granted to the University of Christiania to confer honorary degrees on this special occasion. Among the twenty-nine mathematicians elected *Doctores Mathematicae* were Lord Kelvin, Lord Rayleigh, Dr. Salmon, Sir George Stokes, Prof. G. A. Darwin, Prof. A. R. Forsyth, Prof. Simon Newcomb, and Prof. J. Willard Gibbs. D.

Since the last issue of the MONTHLY two more of its valued friends and contributors have received their summons to close their earthly toil. Prof. P. H. Philbrick and Hon. Josiah H. Drummond will no more give us personal encouragement in our work, nor gladden the hearts of those who loved to study their contributions. While they are dead, yet they will long live in the memories of many of the readers of the MONTHLY. We give below a brief sketch of the life of Prof. Philbrick and in the next issue will appear a brief biography of Hon. Josiah H. Drummond, whose death occurred on Saturday, October, 25.

Philetus Harry Philbrick was born at Machias, New York, March 8, 1839 and died at Bedford, Oregon, October 10, 1902. His death was not expected and was due to heart failure in the early stages of a mild typhoid infection.

After the age of ten years, he had but a few weeks schooling, until at twenty, when he sent himself to the Tafton Collegiate Seminary at Tafton, (now Bloomington) Wisconsin. Here he attended school until 1862, when he enlisted in Company A, 20th Wisconsin Regiment and served until the end of the war. After returning from the war, he taught school for a few months at Prairie du Chein, Wisconsin, and then entered the University of Michigan 1866. He graduated from that institution in the class of 1868, having in two years completed courses entitling him to the degrees of C. E. and B. Sc. For five years until 1873, he was engaged in various constructions in Michigan. He then received the appointment as professor of civil engineering in the University of Iowa and held this position until 1887 when he resigned to enter upon active field work in southern Louisiana, with headquarters at Lake Charles. This remained his home until within a few weeks of his death. Because of advancing years and chronic malarial disease, he removed to southern Oregon where he anticipated great enjoyment in his remaining years looking after a fruit farm, solving problems in various departments of mathematics and writing articles on mathematcial, scientific, and other subjects.

During his residence in Louisiana, he was chief engineer of the Kansas, Watkins & Gulf Railroad; Lake Charles & Gulf Railroad; North American Land and Timber Co. etc.

Professor Philbrick was a contributor to various mathematical and scientific journals, including *The Analyst*, *The Mathematical Magazine*, *The Mathematical Visitor*, *The Engineering News*, and *The Mathematical Monthly.*

In each of the mathematical journals mentioned above, appear a great many of his excellent solutions of problems of various kinds. In the *Mathematical Magazine* is a brief article of his in which he developes a new method for finding the superior limes of a root of an algebraic equation. His method has considerable merit, and is, in general, superior to the common method. In the *Mathematical Magazine* also appears an article of his "On the Abuse of Logarithms." This elicited a reply by Prof. Herbert A. Howe of the University of Denver, Denver, Colorado, and occasioned a long friendly controversey.

In 1901 Professor Philbrick wrote a Field Manual for Engineers. This work which was published by John Wiley & Sons, will take its place among the best works on that subject for many years to come. It is well written and has received the highest commendation from prominent civil engineers.

Professor Philbrick was a man of keen intellect. He was entirely frank and fearless in the expression of his views. He wrote many controversial articles championing the Scientific Education, Metric System, Spelling Reform, Liberal Religion, etc. Three grown children mourn the loss of the kindest of fathers.
F.

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BOOKS AND PERIODICALS.

The Foundations of Geometry. By David Hilbert. Authorized Translation by E. J. Townsend, Ph, D., University of Illinois. Chicago: The Open Court Publishing Co. 1902. Pages, vii+132.

Readers of the American Mathematical Monthly, may consult a technical review of this translation in *Science,* Vol. XVI. No. 399. Aug. 22, 1902. pp. 307-8, where in the interest of merest justice are pointed out some few among the blemishes in what Professor Townsend puts forth as a translation of Hilbert's beautiful 'Festschrift.' These blemishes are the more indefensible because Professor Townsend had before him, in addition to the limped original, the admirable French translation of L. Langel.

For example, Hilbert, so studiously sparing of words, uses the word *Erklarung* nine times on his first thirteen pages.

Townsend never renders it at all. Where he adds from Langel, he seems to have no better luck with his French than with his German. For example, p. 25, "This axiom gives us nothing directly concerning the existence of limiting points or of the idea of converg-